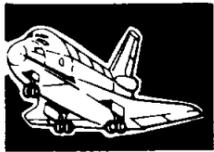


ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS



AT KSC---

Bicentennial Expo Highlights Spinoffs

VOL. 15 NO. 11

Friday, June 4, 1976



STAR TRACKS OVER TEXAS — A camera aboard the gondola of a recent experiments payload on a balloon launched from Palestine, Texas took this 25-mile-high time-exposure sweep of the night sky over East Texas. Light streaks in the top two-thirds of the photo are star tracks, the dark band is the Earth horizon and atmosphere, and the lower white streaks are clouds. The payload was the Balloon-Borne Ultraviolet Stellar Spectrometer (BUSS) experiment in which Dr. Yoji Kondo of the JSC Planetary and Earth Sciences Division is co-investigator with scientists of the Netherlands Space Research Laboratory in Utrecht.

JSC Hosts Meeting Of NASA Health Group

The annual NASA Occupational Medicine and Environmental Health Meeting will be held at JSC June 22-24 in the Building 30 auditorium.

Among the topics to be covered during the meeting will be results of the Hypertension Awareness Program in May in which blood pressure readings were taken of JSC employees. The meetings will be rotated among NASA field centers each year.

Session topics for June 22 are occupation medicine, Occupational Safety and Health Administration standards, environmental carcinogens, occupational exams, pros and cons of treadmill electrocardiograms, and laser standards.

The June 23 agenda covers the NASA environmental health program, NASA pesticide activities, air pollution emission report, NASA

advanced bioinstrumentation developments, JSC occupational/environmental health programs, and JSC computerized medical records.

Topics on the final day are a film, *You Bet Your Eyes*; pollution monitoring, environmental impact statements, RF radiation, the Privacy Act, controlled drug handling, pyrolysis products, and the 1976 hypertension screening program.

Charles P. Bergtholdt, JSC Occupational Health Officer, at 4461 is the JSC coordinator for the meeting.

Fealy Named Top May Co-Op

James Fealy of Propulsion and Power Division was selected as outstanding JSC Cooperative Education Student for May.

PPD chief Guy Thibodaux, in nominating Fealy for the award, said Fealy "has done an outstanding job with minimum technical direction on pyrotechnic, fluid systems, and power generation test programs and general facility support assignments. In addition to his engineering skills, he has a fine work attitude, gets along well with supervisors and coworkers and is willing to assist the organization at any work assignment level."

Negro Colleges Receive \$100 In JSC Drive

JSC Regional Coordinator for Professional Minority and Female Recruiting Baley Davis May 15 turned over \$100 to Radio KCOH that had been raised for the United Negro College Fund by the JSC-UNCF ad hoc employee committee.

Committee chairman Davis, in an interview aired on KCOH, described JSC recruiting on campuses supported by UNCF and said that the JSC committee fund drive likely will become an annual informal project. Davis thanked contributors and committee members George

(Continued on page 2)



WHEELS, WINGS AND HULLS — Miss Transportation Pat Patnesky, center, tries to figure out how to put the hammer down on the Lunar Roving Vehicle in the Exhibit Hall with the help of two of her court — Miss Air Cheryl Montgomery, left, and Miss Sea Nancy Franks. Miss Land Shirley Cochran did not make the May 17 visit to JSC. The girls are Houston-area finalists in the Miss Transportation competition, and if the local Miss Transportation has a name familiar around the Center, it is because her dad is Public Information Office photographer Pat Patnesky. He was behind the camera for this photo.

Temper foam; and sleeping bags, life preservers and blankets manufactured with space-related insulating materials.

The home theme area highlights a model of TEC (The Energy Conservation) House, now under construction at NASA's Langley Research Center, and includes an operating solar energy collector, burglar and fire protection systems, a wastebasket, a heat recovery system and flat-wire insulated electric cable.

Application of computers and computer techniques is emphasized in the transportation area. A large wall display explains the use of SAFER, a computerized control system, to analyze traffic density for planning of faster city transportation routes and the routing of emergency vehicles.

The Kennedy Space Center is host to the Bicentennial Exposition on Science and Technology, which is scheduled from May 30 through September 7.

FEW Chapter Installs Officers

The Abigail Adams Chapter of Federally Employed Women, Inc. has received its charter and FEW Regional coordinator Mary Y. Kerr May 26 installed the following chapter officers:

President Doris Folkes, vice president Marian Carr, Secretary Dorothy Pearson, and treasurer Dorothy Phelan.

Appointed committee chairpersons are: membership-Mary Shep Burton, program — Renee Hall, and public relations — Dianne Smith.

Houston City Controller Leonel Castillo was guest speaker at the installation meeting. His topic was Ethemeralization — or use-of-time planning.

JSC Group Holds Seminar For Employees

NASA Federal Women's Program Coordinator Oeola S. Hall will be the keynote speaker at the opening session June 15 of Federal Employees Week at JSC.

Sponsored by the JSC Federal Women's Program Committee, but benefiting employees of both genders, the week-long seminar will begin with a film festival in the JSC Auditorium before splitting into workshop sessions at the Gilruth Recreation Center. Among workshop topics are communications skills, career counseling, upward mobility and life and property protection, with an emphasis on capability development. The workshops will follow a format of lecturettes, group participation and discussion, and skill drill.

The seminar is open to all JSC federal and industry employees.

(Continued on page 2)



COST-CUTTER — Twenty JSC employees received Certificates of Appreciation and six were presented the new JSC Minuteman Award for significant cost-control savings in a May 19 ceremony. JSC Director Christopher C. Kraft, Jr. made the cost reduction awards covering savings of more than \$4 million this quarter. Top cost-savers were W. R. Acres and V.C. Hammersley (top row, to right of Minuteman) whose Orbiter neutral buoyancy trainer saved \$1.35 million. John M. McGee saved \$710,000 by suggesting adaptation of Apollo GSE electrical power system to Orbiter. P. O. Ferguson (top, second from right) and W. B. Wood (not in photo) saved \$650,000 by suggesting use of the JSC-developed firefighters' breathing system for Orbiter approach and landing tests. Atlas Chance (on leave, not in photo) saved \$679,500 by reductions using existing Center assets. James R. Crain (top right) and Harley F. Erickson (left, middle row) saved \$316,000 in electrical power costs. R. J. Piotrowski (second from left, middle row) accepted an award to Engineering Operation Branch for saving a total \$185,500 in facilities operations and mods. William L. Taylor saved \$110,000 by suggesting reductions in test support capital equipment outlay. Scott N. Morris (third from right, center row) saved \$69,000 with his suggestion for using excess data processing equipment instead of leased equipment, E. S. Johnson, J. S. Sobieski and A. L. Brady (on travel) saved \$34,500 in liquid hydrogen delivery costs. P. F. Horsman (left, bottom row) saved \$28,000 with a high-pressure breathing air system. Don G. Wiseman and his suggestion for storage of gaseous oxygen saved \$11,500. Sheridan J. Berthiaume (third from left, bottom row) saved \$9,500 by suggesting use of excess data processing equipment instead of leased gear. Fred E. Jones' idea for increased data production capability saved \$8,000. Lelan R. Whitaker saved \$2,000 in disposing of Mission Control Center scrap wire and cable. B. R. Drone (bottom right) saved \$1,000 by deleting overlapping cost reporting. Cost Reduction reports filed on NASA Form 1105A are submitted to Mervin Hughes/BH4, ext 5326.

JSC Readies for Threat Of Overdue Hurricane

Hurricane season along the Gulf Coast began Tuesday and runs through November 30. The last destructive hurricane to sweep across the JSC area was Carla on September 11, 1961, and out of Carla's wake came the need for advance planning to meet future hurricane threats — not only to organizations like JSC but to individuals and families living on the Gulf Coast.

The JSC Center Operations Directorate has a hurricane plan that calls for shutdown of all non-essential onsite activities with the impending threat of a hurricane. All employees not part of the rideout crew would be evacuated.

All major JSC organizations have designated Emergency Planning Representatives who will work with the Hurricane Plan Manager and other emergency preparedness people in setting preparations in

motion. JSC employees needing assistance and information should contact their representatives or call the Emergency Preparedness Planning Officer at 483-4441. In an actual hurricane threat the local representative likely will be more accessible than will the Plan Manager who will be involved in readying the Center for riding out the storm.

During duty hours hurricane threat information will be available on a recorded message at 483-6281 and on the onsite closed-circuit television system.

Any decision by the Center Director to close the Center will be relayed through supervisory channels and on the telephone recording and TV system. Before evacuating the Center, employees should unplug nonessential electrical appliances in the work areas, such as coffeepots, heaters, typewriter and clocks. Also, doors should be closed, valuable files moved from outer offices and bottom drawers, venetian blinds raised and any other action to minimize property damage.

Employees not members of the rideout crew or assigned a specific hurricane job are expected to evacuate the Center. Guards will check and secure buildings, clearing non-rideout employees from the Center.

Employees sent home because of hurricane threat are expected to return to work the following workday unless advised otherwise through the news media.

A Galveston National Weather Service office advisory for the upper Texas coast points out that subsidence in the Galveston Bay area further compounds hurricane-driven high tides. "Subsidence has created a potential major disaster: rising tide waters will quickly cut off escape routes along low road elevations. Most of these roads are lower than eight feet above mean sea level and many are below five feet. If evacuation is not begun early, more than 100,000 persons could be trapped when tides reach these levels."

A Weather Service clip-and-save checklist is reprinted at right on what to do when JSC is evacuated and home and family safety becomes uppermost in employees' minds.

Seminar

(Continued from page 1)

Following the theme "Full Partnership: Route to Reality", the seminar agenda includes films from 11am to noon Monday June 14; welcoming remarks at the Gilruth Center at 9am June 15 by JSC Equal Opportunity Programs Office chief Joseph D. Atkinson; introduction by Federal Women's Program Coordinator Mary Y. Kerr; keynote speaker Hall; and communication skills workshop.

Workshop topics for the remainder of the week are: June 16-communications skills, continued; June 17-career counseling and upward mobility; and June 18-Be Aware Men and Women. All workshops start at 9am in the Gilruth Center.

UNCF Drive

(Continued from page 1)

Crittendon of Test and Ground Operations Office, Kenneth Martindale of Resources Management Office, and Henry W. Smith of the Legal Office.

Davis said that others wishing to contribute to UNCF can mail their checks to UNCF, 1 Allen Center Suite 500, Houston, TX 77002 or to Baley Davis/AH7.

Hurricane Season June 1 thru Nov. 30 Peak months are Aug. & Sept.

Number of Tropical Storms and Hurricanes, by month, that has affected the Galveston-Freeport Area in the past 100 years.

June 4 July 8 August 12

September 14 October 4 November 0

Ten of these were considered major storms, that inflicted heavy loss of life and property damage. Winds were in excess of 100 MPH and tides above 10 feet. The 1900, 1909, 1915, 1932, 1943 and Carla of 1961 were the most severe in this century. They killed over 6,000 persons.

Recommended Actions Prior to Hurricane Season or Before a Watch

1. Know the elevation above MSL of your home or place of business.
2. Familiarize yourself with past flooding in your area. Is your home subject to tidal flooding with 6 foot tides? 8 foot? 10 foot? etc.
3. Have your route picked out or planned, if it becomes necessary to relocate to a place of safety or higher ground.
4. If you live in a Mobile Home, Pre-arrange for safe shelter.
5. Know the locations of storm shelters in your area.
6. Check your insurance coverage.

Hurricane Watch

Does not mean that hurricane conditions are imminent but there is a real possibility that the hurricane will threaten this area within 24 hours.

RECOMMENDED ACTIONS WHEN A WATCH IS ISSUED FOR THIS AREA and SOME SUPPLIES YOU SHOULD ARRANGE FOR

1. Fresh batteries for your radio and flashlights.
2. Candles, lamps and matches.
3. Non-Perishable foods, canned goods and drinking water containers.
4. Materials for boarding up windows & other glass openings such as boards, lumber & tape.
5. Gas-up your automobile.
6. Prepare to moor your boat or move it to safer shelter.
7. Monitor progress of storm via radio or TV.

Hurricane Warning

When a warning is issued, it means that hurricane conditions are expected within 24 hours. High tides, winds in excess of 74 MPH, heavy rains and flooding and the possibility of Tornadoes.

Take the following actions immediately

1. If in mobile home, check tie-downs and leave. Never remain in mobile home if hurricane winds are expected.
2. If home is subject to flooding, prepare to leave for higher ground.
 - a. Board-Up large windows and other exposed glass.
 - b. All outside loose objects should be placed inside.
 - c. Move your most valuable possessions that you cannot take with you, to higher points within your home.
3. If you remain at home
 - a. Stay indoors, on leeward or downwind side of house and away from windows or glass doors.
 - b. Beware of the Eye of the Hurricane. Do not be fooled by a lull in the wind, it could be that you are in the eye; if so, extremely high winds, above hurricane force, will rise rapidly from the opposite direction in a matter of minutes.

There are many other actions that can be taken prior and during a storm. Conditions will vary considerable, depending on the strength of the storm, your particular location, type of building construction, and the ever-changing road

building and elevations due to the land subsidence.

After the Storm

Frequently, persons who have weathered or survived a storm venture outside and are electrocuted by blown down power lines.

1. Do not touch or go near fallen utility lines.
2. Make sure you see where you are walking. If it's dark stay inside or if water remains, take no chances in wading unless absolutely necessary.
3. Drive with extreme caution, especially where roads are still under water.
4. Poisonous snakes and insects are always a threat in this area during the post-storm clean-up.
5. Guard against spoiled food, contaminated water and fires.

Hurricane Terms That Are Commonly Used

Tropical Disturbance—An area of disturbed weather in the tropics that has the potential of storm development.

Tropical Depression—A closed low pressure circulation at the surface in the tropics with winds up to 39 MPH.

Tropical Storm—A closed low pressure circulation at the surface in the tropics with winds 39 to 73 MPH.

Hurricane—A closed low pressure circulation in the tropics with winds in excess of 74 MPH.

Small Craft Advisory—When issued in conjunction with possible hurricane conditions for this area, advises small craft operators to take precautions and not to venture into the open Gulf.

Gale Warnings—When winds of 38 to 55 MPH are expected.

Storm Warning—When winds of 55 to 74 MPH expected. Normally, not used in the Gulf or this area, usually Hurricane warnings follow Gale warnings.

Hurricane Watch—Hurricane may threaten this area within 24 hours.

Hurricane Warning—Hurricane force winds or high tides and seas are expected to strike this area within 24 hours.

When a Hurricane Threatens the Texas Coast

An Emergency Hurricane Information Center is established at the National Weather Service in Galveston to disseminate hurricane warnings to persons along the Upper Texas Coast. The long range radar, tide stations and other meteorological sensors along with the NWS vast communications network affords the news media up-to-date information on the storms progress and its potential effects to this area. In addition to providing the latest storm information to the media, frequent hurricane briefings are conducted for Community Preparedness Officials for this area.

Sources For The Public to Obtain the Latest Hurricane Information

1. Virtually all commercial radio and TV stations have a direct teletype line to the National Weather Service Offices and broadcasts are made soon as received.
2. Radio Station KGBC, 1540 KHz, Galveston, in addition to their teletype connections, has a direct radio link between the Weather Office and the station, both on emergency power. All other commercial stations are encouraged to rebroadcast KGBC's messages, if land lines are disrupted from Galveston Island.
3. The NOAA National Weather Service Radio Stations; 162.55 MHz at Galveston and 162.40 at Houston broadcast the latest information on a continuous basis.
4. Law enforcement Agencies, Civil Defense, Red Cross and other local Community Officials are kept abreast of the storms progress and are continually disseminating storm related information.

Take stock in America.

200 years at the same location.

EAA ATTRACTIONS

TICKETS

On sale bldg. 11 - 10 am to 2 pm.

Windmill Dinner Theatre, \$14 couple - May 25 thru June 7; Dwayne Hickman - In "Natalie Needs a Nightie". Dean Goss, \$16 couple - May 18th thru June "Night Watch" a mystery. ABC Interstate Theatre - \$1.50.

Theater Under the Stars Cabaret Theater, *Dames at Sea*, musical comedy at the Shamrock Hilton, Wed and Thurs June 9 and 10, 16 and 17, and 23 and 24. Regular \$6.50 tickets \$325. Friday June 11 and 25, regular \$8.50 tickets \$4.25. Limited quantity.

Tickets are on sale now for SeaArama \$3.25 adults and \$2.25 children. Free Disney Magic Kingdom cards. Houston Astros gift coupons, \$4 boxseats and \$3.15 reserve seats.

Six Flags Fun Seekers Club cards, good for \$1 off each Astro-world and Six Flags Over Texas ticket, are now available. The FSC cards are also good for a 10-percent discount at hotels listed in the club guide and for family vacation packages. See your EAA rep for free Fun Seekers cards.

Tennis Club Holds Spring Doubles Meet

When the final point was scored in the April 3-4 JSC Tennis Club Spring Open Doubles Tournament, the standings were as follows:

Men's advanced: D. Hines and M. Hoffman defeated J. Lacy and J. Magliolo 6-3, 7-5. Men's advanced consolation: D. Wilmarth and M. Brady beat E. Tribble and E. Fendell 4-6, 6-2, 7-6.

Women's advanced: E. Carter and B. Weber defeated K. Evans and M. Christian 6-3, 7-5. Women's advanced consolation: I. Fikkert and R. Damoff outplayed B. Brown and M. Hughes 6-3, 7-5.

Men's intermediate: R. Wooten and J. Craig took E. Tribble and D. Tribble 2-6 6-4, 7-5. Men's intermediate consolation: N. Miller and H. Ranft beat R. Piland and C. Watkins 6-0, 7-6.

Women's intermediate: C. Clark and B. Frank bested J. Adkins and L. Erickson 6-4, 6-3. Women's intermediate consolation: C. Stavino and B. McNeely defeated L. Humphries and P. McCaffety 6-4, 4-6, 6-4.

One-bounce doubles: S. and R. Beusle skunked J. Weber and R. Carter 6-4, 6-3. One-bounce doubles consolation: W. Simmons and M. Wylie topped N. and G. Beck 6-7, 6-1, 6-3.



MOST SUCCESSFUL BLOOD DRIVE

The May 20 JSC blood drive was the most successful yet with 140 units collected. The JSC blood bank is the largest in the Gulf Coast area.

All employees - federal and industry - can donate at any of the scheduled monthly drives listed by date and location on page 44 of the current JSC Telephone Directory.

JSC SURVEY

Results of the JSC Employee Activities Association survey will be published soon in the *Roundup*. A different area, such as athletics, clubs, social, etc., will be carried each issue summarizing results, comments and plans. EAA regrets the delay in publishing survey results, but the compilation and analysis of survey questionnaires was a tedious and time-consuming job.

STOP SMOKING PLAN WORKS!

The five-day plan to stop smoking is working for more than 90

percent of those who stuck with it through the first week. Of the 120 people who expressed interest, about 90 showed up for the first session on Monday and 75 were still hanging in at Friday's final session.

Enthusiasm carried over to the point where the group got together the following Monday to see how everyone fared over the weekend. A check two weeks later showed that 70 (90 percent) are still completely off cigarettes while others have sharply reduced their smoking.

The following unsolicited letter is indicative of the group's experience:

"Thanks for arranging for the 'How to Stop Smoking' course held recently at the Gilruth Center. My wife and I attended: we have both quit smoking as a result. We were both heavy smokers and were skeptical about going to the course in the first place. Somehow, their 'five-day plan' worked, though. I'm not sure which aspect of their multifaceted approach struck a responsive chord in me, but something did.

I would certainly encourage the EAA to reschedule another course, with the same group of instructors, if possible, in the near future."

The course will be offered again in about two months. Interested smokers, who wish they weren't, should call 4592 leaving name, extension and mail code. When arrangements and course dates are set, all inquirers will be contacted.



Arrows to Astronauts Recounts Local History

If one could walk into Dr. Wonmug's Time Machine and go back 200 years to the Clear Lake area, he would immediately realize that the jump backward was a wrong move.

The local citizens at that time were Karankawa Indians who relished file of human. As time wore on the cannibals gave way to "civilization" and the communities that were the forerunners of towns around the Lake sprang up. The town of Clear Creek evolved into League City, Garden Town became Webster and Evergreen became Kemah.

Many of the old buildings and

homes still stand that date back to the 19th century settlement of towns around Clear Lake.

Clear Lake: From Arrows to Astronauts is a word-and-picture account of the history of the Clear Lake area, and includes more than 100 photos, maps and documents - many of which have never before been published. Dolores Kenyon, wife of JSC employee Edward Kenyon, researched and wrote the book as a Galveston County Bicentennial project, and proceeds from sales of the book go to the League City Methodist Church new sanctuary building fund.

Former JSC Public Information Office writer-turned-artist Jack Kroehnke designed the cover.

From Arrows to Astronauts is available for \$5.95 at the JSC Exchange Store in the main cafeteria.

Roundup Swap-Shop

Swap Shop advertising is open to JSC federal and on-site contractor employees. Goods or services must be offered as advertised, without regard to race, religion, sex or national origin. Non-commercial personal ads should be 20 words or less, and include home telephone number. Typed or scribbled ad copy must be received by AP3/Roundup by Thursday of the week prior to publication.

BOATS

75 Evinrude 15-hp OB, elec start, perf, \$650; 73 Evinrude 4-hp OB, perf, \$150; 73 Quachita 15-ft canoe, very good, \$140. Bradshaw, 479-1397.
24-ft Duet, wooden, depthsounder, head, dinette, 71/2-hp Mercury, needs mast repair and bottom paint, \$2000. 488-8003.

VEHICLES

73 Honda CL350, 3000 miles, like new, lugrack, backrest, \$595. 482-5607.
Late 75 Honda XR-75, xint cond, brand new, full cover Shoei helmet incl, \$425. 334-3044.
74 Corvette, T-top, white w/silver int, air, pwr, auto, \$7375. Pearson, 474-3988.
70 Chrysler Imperial 4-dr hrdtp, hvy-dty trlr hitch, radials, clean, loaded, \$1195. 488-4409.
Man's 10-sp nearly-new bike, center-pull brakes, 488-4409.
71 Dodge Royal Sportsman Maxivan, bed and cabinet, air, pwr steer, std shift. Bush, 334-1831.
75 AMF tractor-type riding mower, 8-hp, B-S eng, 34-in floating head w/twin blades, elec start, lites, 30 hrs sun time, all pneumatic tires. Alexander, 482-0920.

PETS

AIBC reg Border Collie pups, Ch bloodlines. 747-3977.
California King Snake about 4 ft long, good cond, beautiful pet, \$15. Bullock, 488-1042.
Free: healthy, short-haired, 2-yr old friendly, neutered male cat named Spitz. 333-4379.
Vizslas make superb hunting dogs, avail approx June 20. 472-5243.

WANTED

Carpool from Meyerland area. Kamen, 771-9847.

PROPERTY & RENTALS

Wooded waterfront lot on Lake Rayburn, 12x50-ft mobile home w/8x28-ft screenporch, all utilities, \$14,500. Beaumont 713/892-8826.
Friendswood 2-acre lot in Eldorado subdiv, \$8500. Zupp, 482-7156.
Choice wooded lot on Lake Livingston at Waterwood, marina, golf, tennis, stables; buyer's terms. Boone, 488-6380.
Luxury 2-bdr apt in By-the-Sea condominium at Galveston West Beach, air, carpeted, color TV, kitchen, fully equip, weekly rental, special summer rate, reserve now. Clements, 474-2622.

HOUSEHOLD GOODS

Relocating: sell living, dining, bedroom furn, other misc household items. Boin, 488-1244.
Heathkit GR900 color TV kit partially built, \$450. Burghduff, 488-3263.

84-in Early American sofa, \$50. McCreary, 946-5285.
Sears coppertone gas dryer, xint, \$125; washstand w/marble top and back, \$185; 60-in coffeetables - Spanish w/2 side doors, \$65; walnut w/inlays, \$45; hickory table/chair set, bark on, 36-in table, straight and rckng chairs, \$140; maple bedroom furniture - table, chest of drawers, 2 nitestands w/drawers, \$100. 554-7052.

MISCELLANEOUS

Kodak XL-33 movie camera w/case, new \$145, sell \$80. 482-6683.
160 classical stereo records, no scratches, xint cond, \$3/ea. 747-3977.
4-pc drum set, white marble finish, snare, tom-tom, cymbal, base, Stewart brand, \$90. 334-3044.
25-in console RCA color TV, xint cond, \$125. 333-2509.
Celestron 10 telescope, 135 inches FL (3429 mm), 1/13.5, w/eyepieces, clock-drive, Unitron finder, mount, xtras, \$1250. Erickson, 488-1901.
Mag-style Ford wheel covers, like new, less than half price, set of 4, \$60. 488-8961.
Two bowling balls, \$5 and \$7; movie camera, \$15; refurbished clarinet, \$75; girl's 20-in bike, \$20; 16-in bike w/trng wheels, \$5. 482-1635.
Instrument flight and ground instruction. 482-1635.
Persons interested in forming a JSC Archery Club please call B. C. Leissner at 5931 or D. D. Greenly at 2131.
75-watt Johnson Ranger amateur radio xmitter, CW or PTT-AM, 1.8 thru 30 MHz variable frequency, xint cond, \$95. Ward, 488-0715.
Sony filmstrip projector, xint cond, \$40. Lindsey, 488-0517.
Size 6 organza/alencon lace beaded wedding dress, Juliet cap w/2 tiers, mantilla-style veil, \$100. 487-5679.
26-in Raleigh bike rear wheel w/working 3-sp gears, \$5. 488-2735.
TI SR50A electronic sliderule calculator w/rchr, case, new - never used, \$60. Schmidt, 333-4397 or 488-4237.
Vacation certificates for delux lodgings in Miami, Nashville, New Orleans (4 days, 3 nites); Las Vegas, Reno (3 days, 2 nites). Good for two for one year, \$7.50 each. 474-2081.

ROUNDUP



NASA LYNDON B. JOHNSON SPACE CENTER HOUSTON, TEXAS

The *Roundup* is an official publication of the National Aeronautics and Space Administration Lyndon B. Johnson Space Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for JSC employees.

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Equal Opportunity is good business!



An hour-and-a-half drive west of the strange mix of glass-wall buildings and Old West that is Tucson, some 10,000 inhabitants of the 4400-square mile Papago Indian reservation are receiving space-age health care through a joint JSC-Indian Health Service project.

Electronic technology such as telemetry of biomedical data, closed-circuit television and computerized data banks has been superimposed over the health care already provided the Papagos by the HEW Indian Health Service. Physicians at the IHS Hospital in Sells, near the center of Papagoland, consult via TV with Indian Community Health Medics (paramedics) that visit remote villages on a regular basis in a large van called a Mobile Health Unit.

A relay antenna atop Quijotoa mountain beams TV, voice and data from the van anywhere in the vast saguaro-dotted reservation back to the IHS hospital and from a smaller clinic in Santa Rosa — also staffed by community health medics.

"The mobile health unit gives the physician a flexible 'outreach'

capability through its black-and-white and color TV, voice communication and computerized data information links with physicians at Sells hospital," said project manager Norm Belasco of JSC Bioengineering Systems Division.

Slow-scan television links between Sells and specialists at the Indian Health Center in Phoenix allows medical consultation in problem cases. Commercial "dial-up" lines carry or receive high-resolution color or black-and-white television for the consultations between IHS physicians at Sells Hospital and Phoenix specialists. The slow-scan TV system is the first of this advanced development to be operational in the US.

One piece of equipment developed for use in the Papago health care system, and carried aboard the mobile health unit, is a suitcase-sized emergency treatment kit which allows paramedics or trained ambulance attendants to communicate with a physician.

The portable compact kit provides voice and telemetry relay of patient vital signs, electrocardio-



grams (EKG) and blood pressure. Included are a battery-powered defibrillator and pacemaker, an oxygen supply, aspirator, resuscitator and airways, laryngoscope, pre-packaged drugs and supplies, and a stethoscope.

Developed from Skylab medical monitoring design, the kit is commercially marketed under the trade name Telecare and is now in use in Houston, San Antonio, Corpus Christi, Midland-Odessa; Montgomery County, Maryland; Altoona, Pennsylvania; and Cleveland, Ohio.

The Santa Rosa clinic offers the same medical services as the mobile clinic as well as more extensive treatment capability. Patients at mobile clinic stops or at Santa Rosa can be diagnosed by the physician at his console in Sells hospital, and immediately receive treatment by health medics under the physician's direction. The IHS-trained community health medics in most cases are Papagos.

One major problem encountered in delivering regular high-quality health care to remote area populations like the Papagos is attracting and recruiting physicians, for whom desert isolation is a cultural shock.

Bringing medical treatment to the villages greatly reduces the amount of traveling by patients either on foot, horseback, in the back of pickup trucks, or in IHS carryalls. Moreover, the actual time spent by patients in waiting for treatment (the mobile health unit does not carry a supply of old waiting room magazines) is minimized, although currently the van is handling from 18 to 27 patients a day instead of the design estimate of 12 to 15 a day. (The record is 44 in one day.)

"There has been a decided increase in the use of health services," said Belasco, "especially in

the remote areas served by the mobile health unit. Villagers are becoming very dependent on scheduled van visits."

The Papago remote health care system became operational in April 1975 after two years of development and installation work by the JSC project team, the Indian Health Service Research and Development Center at San Xavier near Tucson, and the prime contractor Lockheed Missiles and Space Company, Inc., Sunnyvale, California. All planning for the system was coordinated with the Papago Tribal Health Staff.

The system is staffed by IHS physicians and community health medics with technical support by Lockheed technicians. IHS will take over the technical maintenance of the system after the two-year evaluation period is completed in April 1977.

In a paper given in May at the Aerospace Medical Association-American Institute of Aeronautics and Astronautics telemedicine session at the ASMA annual scientific meeting in Miami, Belasco and co-author Dr. Sam Pool outlined the following findings after 11 months of operation:

* The Papago health care system is an effective way to provide quality health care to people in remote areas.

* Telemedicine systems enhance the interaction between physicians and physicians' assistants.

* Physician diagnosis and treatment by telemedicine has been effective in cases involving fractures, lacerations, minor surgery, throat lesions, skin ulcers, snake bites, respiratory infections and gastroenteritis. IHS physicians have reported that TV has been an important factor in 45 percent of the teleconsultations.

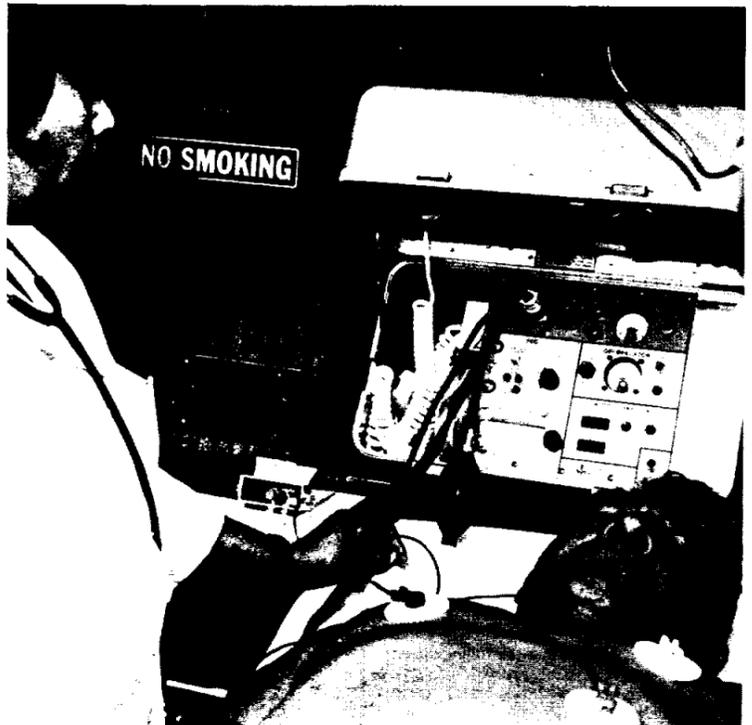
* Off-the-shelf equipment can be

melded into a dependable and maintainable system. In 2916 telecomms between May 1975 and January 1976 the system maintained a 98 percent acceptable performance ratio.

* Periodic audio/video communications with people in remote villages portend broadcast of instruction in environmental health, sanitation, nutrition and disease control as well as general community exchange of current events information.

In his conclusion, Belasco predicts that systems like the Papago health care system will contribute to upgrading of quality health care to people in remote areas, and will be the forerunner to more efficient and expanded telemedicine systems.

The Papago health care system is a space technology application with a rebound, for long-term data on how well this remote health care system functions will give JSC designers valuable information for future space flight crew medical monitoring and health care systems.



by a community health medic



to a physician for diagnosis



and a healthier life for all.